

<b>Notice of Allowability</b>	Application No.	Applicant(s)	
	09/622,500	PADIDAM ET AL.	
	Examiner	Art Unit	
	Georgia L. Helmer	1638	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Interview of Aug 27 and 31, 2004.
2. ☒ The allowed claim(s) is/are 1, 7-16, 18, 24-25, 31-35, 39, 42-47 and 49-50.
3. ☒ The drawings filed on 17 August 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                             |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>#55</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                                     |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance                               |
|   | 9. <input type="checkbox"/> Other _____.  |

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael McCarthy on August 27 and 31 August 2004.

2. In the Specification:

At page 1, just below the title, the following has been inserted:

--This application is a 371 of PCT/US99/04716, filed March 3, 1999, which claims the benefit of U.S. Provisional Application No. 60/076,627, filed March 3, 1998, now abandoned. --

3. In the claims:

Cancel claims 2-6, 17, 19-23, 26-30, 36-38, 40-41, and 48.

Replace claims 1, 7-16, 18, 24-25, 31-35, 39, 42-47, and 49-50 with:

Claim 1. A method for producing in a plant resistance to a single stranded DNA (ssDNA) virus of the Geminivirus family comprising introducing a gene 5 ssDNA-binding protein of Coliphage M13 into said plant, thereby producing resistance to said ssDNA virus in said plant.

Claim 7. The method of claim 1 wherein said Coliphage M13 gene 5 protein has the amino acid residue sequence of SEQ ID NO 1.

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Claim 8. The method of claim 1 wherein said introducing comprises preparing a transgenic plant containing a gene which expresses said ssDNA-binding protein.

Claim 9. The method of claim 8 wherein said gene comprises a nucleotide sequence shown in SEQ ID NOs 2 or 3.

Claim 10. The method of claim 1 wherein said introducing comprises contacting said plant with a composition containing an expression vector capable of expressing said ssDNA-binding protein.

Claim 11. The method of claim 10 wherein said expression vector comprises a nucleotide sequence shown in SEQ ID NOs 2 or 3.

Claim 12. The method of claim 10 wherein said contacting comprises biolistic gene transfer or direct DNA uptake into protoplast.

Claim 13. The method of claim 10 wherein said contacting comprises infection of said plant with a carrier vector.

Claim 14. The method of claim 13 wherein said carrier vector is an *Agrobacterium* vector.

Claim 15. The method of claim 10 wherein said expression vector is present in a virus particle that infects said plant and expresses said ssDNA-binding coat protein.

Claim 16. The method of claim 1 wherein said plant is selected from the group consisting of Abutilon, Acalypha, apple, Ageratum, Althea rosea, Asystasia, Bajra, banana, barley, beans, beet, Blackgram, Bromus, Cassava, chickpea, Chillies, Chloris, clover, coconut, coffee, cotton, cowpea, Croton, cucumber, Digitaria, Dolichos, eggplant, Eupatorium, Euphorbia, fababean, honeysuckle, horsegram, Jatropha, Leonurus, limabean, Lupin, Macroptilium, Macrotyloma, maize, melon, millet, mungbean, oat, okra, Panicum, papaya, Paspalum, peanut, pea, pepper, pigeon pea, pineapple, Phaseolus, potato, Pseuderanthemum, pumpkin, Rhynchosia, rice, Serrano, Sida, sorghum, soybean, squash, sugarcane, sugarbeet, sunflower, sweet potato, tea, tomato, tobacco, watermelon, wheat and Wissadula.

Claim 18. The method of claim 1 wherein said Geminivirus is selected from the group consisting of Mastrevirus, Curtovirus and Begomovirus genera.

Claim 24. A method for producing geminivirus resistance in a plant comprising introducing into said plant a gene capable of expressing Coliphage M13 gene 5 protein in said plant, thereby producing resistance to said geminivirus in said plant.

Claim 25. A DNA expression vector comprising a nucleotide sequence that encodes a gene 5 ssDNA-binding protein of Coliphage M13, wherein said vector is capable of expressing said protein in plants.

Claim 31. The DNA expression vector of claim 25 wherein said Coliphage M13 gene 5 protein has the amino acid residue sequence of SEQ ID NO 1.

Claim 32. The DNA expression vector of claim 25 wherein said nucleotide sequence comprises a nucleotide sequence shown in SEQ ID NOs 2 or 3.

Claim 33. The DNA expression vector of claim 25 wherein said vector is a carrier vector.

Claim 34. The DNA expression vector of claim 33 wherein said carrier vector is an Agrobacterium vector.

Claim 35. The DNA expression vector of claim 25 wherein said plant is selected from the group consisting of Abutilon, Acalypha, apple, Ageratum, Althea rosea, Asystasia, Bajra, banana, barley, beans, beet, Blackgram, Bromus, Cassava, chickpea, Chillies, Chloris, clover, coconut, coffee, cotton, cowpea, Croton, cucumber, Digitaria, Dolichos, eggplant, Eupatorium, Euphorbia, fababean, honeysuckle, horsegram, Jatropha, Leonurus, limabean, Lupin, Macroptilium, Macrotyloma, maize, melon, millet, mungbean, oat, okra, Panicum, papaya, Paspalum, peanut, pea, pepper, pigeon pea, pineapple, Phaseolus,

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potato, Pseuderanthemum, pumpkin, Rhynchosia, rice, Serrano, Sida, sorghum, soybean, squash, sugarcane, sugarbeet, sunflower, sweet potato, tea, tomato, tobacco, watermelon, wheat and Wissadula.

Claim 39. A composition for producing resistance to a ssDNA virus of the Geminivirus family that infects plants comprising a DNA expression vector comprising a nucleotide sequence that encodes a gene 5 ssDNA-binding protein of Coliphage M13, wherein said vector expresses said protein in said plant

Claim 42. The composition of claim 39 wherein said Coliphage M13 gene 5 protein has the amino acid residue sequence of SEQ ID NO 1.

Claim 43. The composition of claim 39 wherein said nucleotide sequence comprises a nucleotide sequence shown in SEQ ID NOs 2 or 3.

Claim 44. The composition of claim 39 wherein said DNA expression vector is a carrier vector.

Claim 45. The composition of claim 44 wherein said carrier vector is an Agrobacterium vector.

Claim 46. A transgenic plant containing a DNA expression vector comprising a nucleotide sequence that encodes a gene 5 ssDNA-binding protein of Coliphage M13, wherein said vector expresses said protein in said plant.

Claim 47. The transgenic plant of claim 46 wherein said DNA expression vector is the vector of claim 25.

Claim 49. The transgenic plant of claim 46 wherein said Coliphage M13 gene 5 protein has the amino acid residue sequence of SEQ ID NO 1.

Claim 50. The transgenic plant of claim 46 wherein said nucleotide sequence comprises a nucleotide sequence shown in SEQ ID NOs 2 or 3.


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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Georgia L. Helmer whose telephone number is 571-272-0796. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on 571-272-0804. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Georgia Helmer PhD  
Patent Examiner  
Transgenic Plants, Art Unit 1638  
6 September 2004

  
ELIZABETH MCELWAIN  
PRIMARY EXAMINER